



Stormwater Ordinance
Greenville, South Carolina
Executive Summary

December 27, 2007

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As a condition of the City of Greenville's Municipal Separate Storm Sewer System (MS4) Permit with the South Carolina Department of Health and Environmental Control, the City is required to adopt a new Stormwater Ordinance which reflects the minimum requirements of the Federal Clean Water Act and South Carolina Pollution Control Act. In response to this condition, the City of Greenville has developed a comprehensive Stormwater Ordinance that consolidates all regulations related to stormwater quantity and quality, which meets or exceeds the State and Federal Standards. The Ordinance follows the premise of "No Adverse Impact" and establishes regulatory guidelines for meeting the policies and goals of the City's Stormwater Management Plan. The Ordinance's comprehensive standards are consistent with other regionally and nationally recognized programs as well as consistent with the Greenville County requirements.

The new Stormwater Ordinance provides regulatory direction on when a permit is required and the necessary permit requirements. The Ordinance establishes performance standards for all development related to stormwater runoff rates, runoff volume reduction, release rates, detention, conveyance, water quality treatment, buffers, and soil erosion and sediment control. Special considerations are given to special management areas such as floodplains, floodways, flood-prone areas, wetlands, riparian areas, and public roadways. The Ordinance also addresses the issue of illicit discharges, illicit connections, spills, and other non-stormwater pollution related nuisances as required by the City's MS4 Permit. The following summaries identify the primary differences in the new Ordinance as compared to the existing Ordinance.

Article I: Authority and Purpose – This section restates the City's Authority to implement this Ordinance and consolidates the purpose of the Ordinance as a mechanism to establish reasonable rules and regulations for addressing stormwater related issues.

Article II: Ordinance Enforcement – Establishes the duties and responsibilities of those responsible for implementing the Ordinance. These duties serve not only the City of Greenville, but serve to meet the administrative needs as set forth by State and Federal Agencies.

Article III: Stormwater Management Utility – This section is taken directly from the existing code.

Article IV: Stormwater Permits – This section is a reorganization of Section 19, Article V of the current Ordinance to connect the various Stormwater Management Requirements into a logical sequence.

Section A identifies what activities constitute development and thus a permit, and what is considered to be exempt from the Ordinance. This will allow for consistent determinations of what projects require permits and will require the development of

permit flow charts to assist applicants. Should a permit be required, there are three classifications of development: minor, major, and public roads. This threshold is consistent with the MS4 Permit Requirements. The Ordinance will now allow for conditional approvals for grading to begin once certain requirements are met, but before final site approval is given. This will allow the City to offer flexibility during the permit process and work with the development community.

The Contiguous Property Clause is a new addition to this section. The purpose of this clause is to prevent inappropriate phasing of developments. This will allow the City to prevent scenarios where development occurs and work is phased to fall below regulatory thresholds in an effort to avoid requirements.

Section B.1 provides specific performance standards that apply to all development requiring a permit.

Section B.1.a restates that stormwater related features must be addressed on plats and in site plans. This also establishes that structures in close proximity to flood sources must be protected to the same degree as structures located in a floodplain. This section establishes that stormwater management systems must be operational prior to the construction of new structures.

Section B.1.b establishes the City of Greenville's authority to identify methodologies that are appropriate for determining stormwater runoff estimates.

Section B.1.c establishes the City of Greenville's authority to require that flood discharges shall not exceed predevelopment rates for storms up to the 25-year event. This section includes a provision to protect up to the 100-year event by requiring the applicant to demonstrate that the 100-year event will not increase flood heights or increase the risk of erosion on adjacent properties. This will allow the City to insure that downstream properties are not adversely impacted by new development.

Section B.1.d identifies techniques and provides guidance for reducing runoff and meeting the flood discharge requirements.

Section B.1.e establishes minimum performance standards and requirements for detention facilities. Depending on site specific Requirements, these facilities may be designed to provide water quality and quantity functions. Technical Environmental Review may need to be considered for such facilities.

Section B.1.f establishes minimum performance standards and requirements for the stormwater conveyance system. The conveyance system includes storm sewers, swales, channels, streams and overland flow paths.

Section B.1.g establishes minimum performance standards and requirements for meeting the MS4 Permit requirements for post construction stormwater discharges.

Section B.1.h establishes the City of Greenville's authority to require buffer areas in order to protect the City's environmental resources as well as provide mechanisms for meeting post construction stormwater discharge requirements of the MS4 Permit.

Section B.1.i establishes minimum performance standards for addressing soil erosion and sediment control requirements of the MS4 permit for Construction Activities.

Section B.2 codifies the items that must be submitted for permit review for minor and major developments. The purpose of this summary is to insure compliance with the City of Greenville Regulations as well as pertinent State and Federal partners with the City.

Section C.1 establishes the minimum requirements for development activities in regulatory floodplains and regulatory floodways.

Section C.1.a addresses situations where a floodplain and floodway are identified by the City of Greenville and FEMA. The section establishes the City of Greenville's authority to regulate those areas that are not identified on FEMA maps as floodplains, but are identified by City of Greenville Watershed Plans as being floodplains.

Section C.1.b primarily includes language required by FEMA to maintain compliance with 44 CFR §60.3 allowing the City and residents to participate in the National Flood Insurance Program. It also establishes technical criteria for compensation for filling in the floodplain

Section C.1.c establishes the City of Greenville's authority to limit activities in the floodway to those items deemed appropriate uses. Technical standards for the definition and determination of the floodway are also codified.

Section C.1.d establishes guidelines for insuring that new stream crossings are compliant with State and Federal regulations and that they do not result in negative impacts to adjacent property owners.

Section C.1.e establishes administrative and technical guidance for those areas where a floodplain has been identified, but no floodway exists. Under current federal rules, these areas are considered to be floodways and floodway development activities are limited by this Ordinance.

Section C.1.f codifies the items that must be submitted for permit review.

Section C.2 establishes the City of Greenville’s authority to regulate those flood-prone areas that are not identified as floodplain, but are known to have flood risks as if they were floodplains.

Section C.3 establishes the City of Greenville’s authority to regulate wetlands in a manner consistent with the U.S. Army Corps of Engineers. This will afford the City an opportunity to provide input into the federal permitting process and insure that mitigation activities are consistent with the interests of the City.

Section C.4 establishes the City of Greenville’s authority to regulate riparian areas along streams and rivers to insure activities are consistent with City interests and MS4 Permit requirements.

Section C.5 establishes the City of Greenville’s authority to regulate public roads in the City. The intent of this provision is to insure that both water quality and quantity provisions are taken into consideration in the design, construction, and post construction phases as set forth by the City’s MS4 Permit.

Article V: Variances and Appeals – The NFIP establishes that variances can only be approved by the community and community is defined by 44 CFR §59.1 as “*any State or area or political subdivision thereof, or any Indian tribe or authorized tribal organization, or Alaska Native village or authorized native organization, which has authority to adopt and enforce flood plain management regulations for the areas within its jurisdiction.*” By this definition, the current effective Ordinance is not compliant with the federal regulations. To that end this section places the responsibility on the Planning Commission to facilitate the Variance Public Hearing and make a recommendation to the City Council. The ultimate responsibility for a variance lies with the City Council as required by 44 CFR §60.6.

Article VI: Inspections and Access – This section restates the City of Greenville’s authority for access to inspect permitted sites for compliance with the City’s regulations. It also affords City Staff the opportunity to collect samples to insure MS4 requirements and standards are being met.

Article VII: Illicit Discharges – This section establishes the City of Greenville’s authority to regulate illicit discharges, illicit connections, spills, and nuisances as required by the City’s MS4 Permit.

Article VIII: Penalties and Legal Actions – This section restates City of Greenville’s authority to seek penalties and legal actions for failure to comply with this Ordinance.

Article IX: Disclaimer of Liability - This section is consistent with the current Ordinance language.

Article X: Separability - This section is consistent with the current Ordinance language.

Article XI: Abrogation and Greater Restrictions - This section is consistent with the current Ordinance language.

Article XII: Effective Date - This section established the effective date of the Ordinance.

Appendix A – Provides definition for the terms in the Ordinance.

Appendix B – Identifies the City of Greenville Stormwater Master Plans that may be utilized as best available information for regulatory purposes.

Appendix C – Identifies the affective FEMA Flood Insurance Studies and Maps in the City of Greenville. The inclusion of this information is required to maintain NFIP compliance.

Appendix D – Provides information regarding the City of Greenville’s Stormwater Utility Rates.

Appendix E – Articulates the responsibilities and duties of the Enforcement Officers of this Ordinance.

Appendix F – Identifies a partial list of permitting agencies that may require a permit for development in the City of Greenville in addition to the Stormwater Permit as established by this Ordinance.

Appendix G – Identifies the recognized precipitation values for various durations and recurrence intervals that are to be used for Stormwater Permitting as established by this Ordinance.

Appendix H – Reserved for future use should watershed dependent release rates be identified in a new or revised Stormwater Master Plan.

The timeline for implementation of the Stormwater Ordinance included the following process.

- August 30, 2007: A roll-out meeting inviting representatives from the Development and Design Communities was held.
- September 11, 2006: The Public Notice for the Public Hearing to be held during the October 11, 2007 Planning Commission Meeting was published.
- September 12, 2007: The Ordinance was posted on the City’s WEB page on.
- September 18, 2007: The City issued a Press Release seeking input on the proposed Stormwater Ordinance.
- November 16, 2007: A meeting with the design professionals to discuss concerns and solicit comments was held. Thirty-three firms from the Greenville area were invited with eleven sending representatives.
- November 16, 2007: A meeting with the development community representatives to discuss concerns and solicit comments was held. More than forty representatives/firms from the Greenville area were invited with two sending representatives.

- December 5, 2007: A Comment-Response Document responding to all written comments was developed and provided to the Planning Commission with staff recommended changes based upon comments received through the process.
- December 13, 2007: The Planning Commission unanimously approved the Ordinance with staff recommended changes and recommended adoption by the City Council.

The City Council can execute the 1st Reading at the January 14, 2008, Council Meeting. The 2nd Reading and adoption of the Ordinance can occur at the at the January 28, 2008 Council Meeting with an Effective Date of February 1, 2008.

As expected, there were several specific concerns with the Ordinance. These concerns are identified in the Comment Response Document. The Comment Response Document includes both the comments received and a response stating the staff opinion regarding the point in question. The following is a summary of general concerns related to impacts on existing homeowners/businesses and the development community.

Impacts on Existing Homeowners – The proposed Stormwater Ordinance should have minimal impact on existing residential homes. The provisions generally apply to new, multiple lot residential developments and commercial developments. The proposed Ordinance’s regulations should provide additional CRS Credit for the City of Greenville, which may lead to further reduced flood insurance premiums for residents and businesses who carry flood insurance. The Illicit Discharge provision may impact some homeowners, but only if they dump non-stormwater materials that are harmful to the environment into a stream or storm sewer.

One possible scenario that may impact existing homeowner and/or commercial owners is related to building additions adjacent to or within the floodplain. The current regulations only require structures located in the floodplain to be built one foot above the Base Flood Elevation. The new regulations shall require all structures in or adjacent to the floodplain to be built to the Flood Protection Elevation, which is between 2 to 4 feet above the Base Flood Elevation. Any structure that changes or expands its footprint to place any portion of the structure in a floodplain will be strongly discouraged. According to FEMA, this action would now place the entire structure in the floodplain. The current federal regulations dictate that the lowest adjacent grade of any structure must be equal to or greater than the Base Flood Elevation; otherwise the entire structure is considered to be in the floodplain and is subject to mandatory flood insurance provisions. The federal rules also mandate that the structure now be subject to the Substantial Improvement and Substantial Damage provisions. While the likelihood of Substantial Improvement provision ever applying is minimal, if the structure were to suffer damage that exceeded 50% of the structures value, it would have to be brought into compliance with all floodplain regulations.

An example of this used by FEMA is described in the following scenario. A home is located on a slope adjacent to a stream with a mapped floodplain. The home’s foundation is located several feet above the floodplain. The homeowner builds a large deck that connects to the home and supports are placed in the floodplain. By placing the deck posts in the floodplain

and connecting the deck to the home, the home is now considered to be in the floodplain and subject to all floodplain provisions.

With rising flood losses, Congress has given strong indication that there will be a strengthening of floodplain regulations. With the reauthorization of the National Flood Insurance Program (NFIP) on the horizon, the proposed regulations will meet the expected changes and allow the City of Greenville to be a model for other Communities nationwide.

Impact on the Development Community – The proposed Stormwater Ordinance will require changes in design procedures related to Stormwater for new development. These are new, comprehensive regulations that will initially require additional assistance and guidance by City Staff. For those projects that do not impact Special Management Areas, the design considerations should be limited to runoff control and water quality provisions.

Overall, the requirements to consider runoff management, flood-prone areas, floodplain and floodway design considerations, Best Management Practices (BMPs), buffers, wetlands, and riparian areas are items that will likely result in some level of concern in the development community. All provisions of the Ordinance are consistent with requirements of other nationally recognized Stormwater Programs. While these provisions are used in many areas in the United States, they consistently are an area of concern with the Greenville development community because of the use limitations or design requirements that are placed upon them.

Runoff reduction/control requires that the runoff not exceed predevelopment conditions through the 25-year, 24-hour storm. Designers must also demonstrate that there is adequate capacity to pass the 100-year, 24-hour storm, without increasing flood heights or increasing velocities on adjacent properties. The current standard provides for protection only through the 10-year, 24-hour storm. The current standards result in greater flooding, increased streambank erosion, and reduced water quality during events beyond the 10-year event. These larger storm events typically produce the most damage to the public and, under current standards, would continue to worsen. The use of the 25-year and 100-year storms as a design requirement is similar to other regional programs and federal standards protecting adjacent properties from adverse impacts.

Detention will likely be the typical method chosen by designers for addressing the runoff issues. This choice will necessitate working with the design community to identify appropriate detention methods that can be incorporated into the site design that are both functional and aesthetically acceptable. City staff has been enforcing this proposed standard for the past several months and the engineering community has been able to meet this requirement. The Ordinance will provide clear regulatory guidance and provide a consistency of protection that is missing from the current City Ordinance.

The consideration of flood-prone areas has been limited to FEMA mapped floodplains in the past. This has allowed developments to occur that have resulted in numerous complaints and issues to be addressed by the City Public Works Stormwater Staff. The provisions of the new Ordinance will attempt to address these potential problems before the development occurs so that the City is not dealing with the impacts over the next few years.

The floodplain and floodway regulations set forth in the new Ordinance meet or exceed the requirements for participation in the NFIP. The Ordinance establishes an expanded definition of floodway as well as “appropriate uses” in the floodway. The definition will likely result in larger floodway widths. However, it is important to realize that the floodway is that portion of the floodplain where the major conveyance occurs, velocities are at their highest, and typically represents the center of the floodplain area. The floodway use restrictions were included in the Ordinance to protect public health and safety. Appropriate economic uses of the floodway are identified. By limiting uses in the floodway, the City will be limiting the threat of damages in the area of the floodplain with the highest risk.

The two floodplain provisions that will likely raise concern are the compensatory storage provision and the flood protection elevation provision. The compensatory storage provision requires a 1.5:1 replacement ratio for lost flood storage. The current City provision is 1:1. The increase is provided as a factor of safety and a mechanism to minimize intrusions into the floodplain. The flood protection elevation provision increases the freeboard set forth by the City of Greenville from 1 foot to 2 feet required and 4 feet recommended at the discretion of the Administrator. This affords the City some flexibility while allowing the Ordinance provisions to match standards currently in place in Greenville County.

BMPs are a design consideration that are widely used throughout the United States, but have not been previously implemented in the Upstate. These design provisions are a requirement taken directly from the City’s MS4 Permit with DHEC and EPA.

The buffer requirements are also widely used throughout the United States. Buffers are limited to areas along streams and wetlands, where encroachments should be limited, and are likely to be subject to flooding. Buffers provide an effective transition to receiving waters that help protect water quality. While wetlands and riparian areas still fall under the purview of the U.S. Army Corps of Engineers, the proposed Ordinance is consistent with the federal guidelines and affords the City of Greenville input in the regulatory decision process for promoting environmentally friendly bio-designs. This requirement will allow the City to have input on permit review so those requirements are consistent with the City’s vision for the City’s wetlands, streams, and rivers preservation.

The new Stormwater Ordinance will serve as the City of Greenville’s regulatory guide for protecting the public from Stormwater related problems that uncontrolled, could lead to damage to property and threats and inconvenience to public health safety, welfare, the environment and ultimately to loss of property or life.